

II. Listing of Claims

1. (Currently Amended) A fluidized-bed reactor for oxychlorination of ethylene, oxygen and HCl, said reactor having a reactor wall, with a heat exchange apparatus, said heat exchange apparatus comprising:

a heat exchanger, including a plurality of tube packets, in a fluidized bed for releasing heat evolved from an exothermic reaction of the oxychlorination to a heat-transfer medium in the tube packets, to water/steam; and

a ring pipe coupled to said heat exchanger and mounted directly onto an interior of the reactor wall,

wherein the tube packets are fed with water distributed via the ring pipe and collector (9) and the steam removed via the ring pipe and collector (10), ~~wherein the ring pipe terminates in a distribution or collection chamber mounted on the reactor wall,~~

wherein the collectors (9 and 10) ~~are distribution or collection chamber~~ is designed to be essentially circular in cross section and placed ~~on~~ in the reactor wall ~~both inside and outside~~ with essentially one-half of the cross section assigned to the interior of the reactor wall and one-half of the cross-section assigned to an exterior of the reactor wall, ~~with a first internal opening defined on the reactor wall between the chamber halves, said first internal opening having an opening dimension less than the diameter of the circular cross section of the distribution or collection chamber, and~~

~~wherein the coupling between said ring pipe and said heat exchanger includes a second internal opening therebetween, said first and second internal openings for defining a desired pressure loss and hence for ensuring uniform flows over the tube packets. and~~

wherein the collectors include throttle holes (13) located in a position selected from the group consisting of
the collector wall between the tube bundles (2) and the collectors (9 and 10),
the midline of the collectors (9), and
both the collector wall between the tube bundles (2) and the collectors (9 and 10)
and in the midline of the collectors (9).

2. (Currently Amended) A heat exchange apparatus for releasing heat evolved from an exothermic reaction in a fluidized-bed reactor for oxychlorination of ethylene, oxygen and HCl, said fluidized-bed reactor having a reactor wall, said heat exchange apparatus comprising:

a plurality of tube packets in a fluidized bed within said fluidized-bed reactor, said plurality of tube packets pressurized with a heat-transfer medium; and

a ring pipe mounted onto an interior of the reactor wall and coupled to said tube packets including a first internal opening there-between,

wherein the tube packets are pressurized with the heat-transfer medium distributed via the ring pipe and collector (9) and gas removed via the ring pipe and collector (10), ~~wherein the ring pipe terminates in a distribution or collection chamber mounted on the reactor wall, and~~

wherein the collectors (9 and 10) are ~~wherein the distribution or collection chamber is~~ designed to be essentially circular in cross section and placed ~~on~~ in the reactor wall both inside and outside with essentially one-half of the cross section assigned to the interior of the reactor wall and one-half of the cross-section assigned to an exterior of the reactor wall ~~with a second~~

~~internal opening defined on the reactor wall between the chamber halves, said second internal opening having an opening dimension less than the diameter of the circular cross section of the distribution or collection chamber, said first and second internal openings for defining a desired pressure loss and hence for ensuring uniform flows over the tube packets. and~~

wherein the collector includes throttle holes (13) located in a position selected from the group consisting of

the collector wall between the tube bundles (2) and the collectors (9 and 10),

the midline of the collectors (9), and

both the collector wall between the tube bundles (2) and the collectors (9 and 10) and in the midline of the collectors (9).

3.-8. (Canceled)

9. (Previously Presented) A method of providing heat exchange in a fluidized bed reactor for the oxychlorination of ethylene, oxygen and HCl, the fluidized bed reactor having a reactor wall, the method comprising the steps of:

providing a heat exchanger, including a plurality of tube packets, in the fluidized bed for releasing heat evolved from an exothermic reaction of the oxychlorination to a heat-transfer medium in the tube packets, to water/steam;

coupling a ring pipe to said heat exchanger; and

pressurizing the tube packets with water distributed via the ring pipe and releasing steam via the ring pipe, wherein the ring pipe terminates in a collection or distribution chamber and is mounted on an interior of the reactor wall,

wherein the distribution or collection chamber is designed to be essentially circular in cross section and placed on the reactor wall both inside and outside with essentially one-half of the cross section assigned to the interior of the reactor wall and one-half of the cross-section assigned to an exterior of the reactor wall with a first internal opening defined on the reactor wall between the chamber halves, said first internal opening having an opening dimension less than the diameter of the circular cross-section of the distribution or collection chamber, and

wherein the coupling between said ring pipe and said heat exchanger includes a second internal opening therebetween, said first and second internal openings functioning as throttle holes for defining a desired pressure loss and hence for ensuring uniform flows over the tube packets.

10.-16. (Canceled)

17. (Currently Amended) A fluidized bed reactor in accordance with claim 23 4, wherein the first and second openings have the same dimension.

18. (Currently Amended) A fluidized bed reactor in accordance with claim 23 4, wherein the first and second openings have different dimensions.

19. (Currently Amended) A heat exchange apparatus in accordance with claim 24 ~~2~~, wherein the first and second openings have the same dimension.

20. (Currently Amended) A heat exchange apparatus in accordance with claim 24 ~~2~~, wherein the first and second openings have different dimensions.

21. (Previously Presented) A method in accordance with claim 9, wherein the first and second openings have the same dimension.

22. (Previously Presented) A method in accordance with claim 9, wherein the first and second openings have different dimensions.

23. (New) The fluidized-bed reactor of claim 1 where the collector includes throttle holes (13) located in both the collector wall between the tube bundles (2) and the collectors (9 and 10) and in the midline of the collectors (9).

24. (New) The heat exchange apparatus of claim 2 where the collector includes throttle holes (13) located in both the collector wall between the tube bundles (2) and the collectors (9 and 10) and in the midline of the collectors (9).